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Tobacco Wildfire

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TOBACCO WILDFIRE

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Wildfire of tobacco was first reported from North Carolina, in 1917. Since that time it has spread rapidly, until now it is known in destructive form in at least fifteen States, including most of the important tobacco growing areas in this country. The presence of the disease in New York State was first brought to the attention of the Department of Plant Pathology by County Agent Hewitt, of Chemung County, in July, 1922. The heavy losses sustained by those growers in whose fields the disease has appeared, have shown the desirability of assembling the important facts which have been learned in this and other States concerning the disease and its control.

No plants other than tobacco have been found affected by wildfire in the field. The organism causing the disease has been found on tomato growing in a seedbed, but apparently affected it only slightly. However, a careful watch should be kept for weeds and other plants which might harbor the organism in fields or around seedbeds.

APPEARANCE OF THE DISEASE

The damage caused by wildfire is almost entirely due to the spotting of the leaves, altho the disease affects other parts, including the seed pods. On the leaves, the spots in their early stages show a small, dead center with a definite, more or less circular, pale green area surrounding it. As the spots grow older, the brownish dead areas become larger and the surrounding yellowed zone is less marked. The presence of this pale green or yellowish zone is the most reliable symptom by which wildfire may be distinguished from the other tobacco diseases that are likely to be found in New York State (figure 1).

In the seedbed, particularly when the plants are very young, the disease may appear as a soft rot, involving the entire plant and giving it a water-soaked appearance. Later the seedlings will usually show definite spots like those already described for the older plants. Doubtful cases should be sent to the Department of Plant Pathology, New York State College of Agriculture, Ithaca, New York, for identification.

CAUSE OF WILDFIRE

Wildfire is caused by a bacterial organism, *Bacterium tabacum*, about $1/5000$ inch long, which is present in countless numbers in the diseased spots. This organism requires moisture for growth and multiplication, but is able to live in a comparatively dry condition for several months at a time.

OVERWINTERING AND SPREAD OF THE CAUSAL ORGANISM

The possible materials that carry the wildfire germs thru the winter are tobacco seed; the seedbed, including boards and sash covers; the stems and leaves in the curing shed; and the stubble and soil in the field. It has been assumed by several workers that the germ never survives the winter in the field, yet evidence has accumulated to show that this probably does happen occasionally, at least. There is good evidence, also, that the stems and the other refuse from the sheds may carry the disease germ to the seedbed or to the field. However, it is certain that the first appearance of the disease is most frequently noted in the seedbed. We must look, then, to the seed and the seedbed as the chief sources of the organism in the spring.

Once the organism is introduced into the seedbed, it may be spread by handling the plants, by excessive watering, and by poor ventilation. It is probably also spread, to some extent, by flea beetles. In the field, the spread of the disease is due very largely to rain, especially when accompanied by wind. During a prolonged rainy period, the organism moves out to the surface of the leaf and is spattered to the soil or to neighboring plants, where it quickly becomes established. This process is repeated with great rapidity under favorable conditions. The disease germ can also be spread from plant to plant, and even from field to field, by cultivating, topping, suckering, and other operations, especially when the plants are wet.

CONTROL MEASURES

Since the disease in general makes its first appearance in the seedbed and is carried with the transplants to the field, control measures should be concentrated on the seed and on the seedbed. It has been shown that plants which are free from disease when they leave the seedbed rarely develop wildfire in the field.

Seed selection

Whenever possible, seed should be selected from a field which shows no wildfire whatever. If this is not possible, the seed head can still be protected to a considerable extent by covering it with a paper bag.

Seed treatment

It is generally recommended that seed that is not known to be free from wildfire be treated in corrosive-sublimate solution. It has been found, however, that in New York State and in the Connecticut River Valley the seed does not always germinate satisfactorily after such treatment. This method has been used for several years with excellent results in the States farther south. An inquiry showed that the growers in the warmer States sow the seed, after treatment, directly in the seedbed, while in the colder States the seed is usually germinated, previous to sowing, in a woolen or cotton cloth, in rotten wood, or in some other material.

Investigation brought out the fact that samples from the same lot of treated seed would germinate well when sown on the soil or in a light



FIGURE I. SYMPTOMS OF TOBACCO WILDFIRE

